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To do or not to do: Desirability and consistency mediate judgments of regret

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ABSTRACT

In 4 studies, the authors demonstrated that when errors associated with action were inconsistent with decision makers' orientation, they were undesirable and produced more regret than did errors associated with inaction. Conversely, when errors associated with action were consistent with decision makers' orientation, they were desirable and produced less regret than did errors associated with inaction. Desirability and consistency mediated this relationship, independent of mutability. These results were obtained when judgments and decisions to act or not act were made in close temporal proximity to one another as well as when participants reflected on their past decisions. The authors provide an analysis of when counterfactuals would and would not be expected to mediate judgments of normality and regret.

Norm theory (e.g., Kahneman & Miller, 1986) contributed to the understanding of the judgment process and altered the conceptualization of how judgments of normality are construed. In norm theory (e.g., Kahneman, 1995; Kahneman & Miller, 1986), a norm is conceptualized as a set of recruited representations. These representations can be fragmented, and they can be constructed ad hoc. Therefore, each event can have its own associated set of constructed counterfactual alternatives. These counterfactuals, or possible worlds, in turn influence the normality of an event. Because an event or another evoking stimulus may be compared with its counterfactual alternatives, the normality of the event can depend on the availability of counterfactual alternatives—the event's mutability.

According to norm theory, mutability not only influences judgments of normality, it also influences a perceiver's affective response (e.g., Baron & Ritov, 1994; Gilovich & Medvec, 1994; Gilovich, Medvec, & Chen, 1995; Gleicher et al., 1990; Kahneman & Tversky, 1982; Landman, 1987, 1994). For example, if an accident involves abnormal or exceptional circumstances, a perceiver can easily construe alternatives for the accident (e.g., undoing it); if the accident involves very normal circumstances, few alternatives can be constructed. Because of this difference in mutability, the abnormal action is associated with especially high levels of regret.

In a similar vein, it is assumed that it is especially easy to imagine not performing an action. Therefore, acts of commission (errors associated with decisions to act) are expected to be associated with higher levels of regret than are acts of omission (errors associated with decisions not to act). Research supports this prediction. When an action and an inaction producing identical losses were compared, it was the action (the act of commission) that was associated with the highest level of regret (e.g., Kahneman & Tversky, 1982). Subsequent studies using both positive and negative outcomes and various decision contexts have replicated this finding (e.g., Baron & Ritov, 1994; Gilovich et al., 1995; Gleicher et al., 1990; Landman, 1987, 1994).

However, researchers investigating regret judgments following actions versus inactions have typically not measured the mutability of the action versus the inaction (see N'gbala & Branscombe, 1997). Therefore, it is possible that differences in regret levels following errors in actions or inactions are not always the result of differences in mutability. Rather, because judgments of regret involve affect, the desirability of the decision itself may mediate the relationship between the decision (e.g., those involving action or inaction) and judgments of regret. Consequently, decisions to act or not act that are especially desirable may produce especially low levels of regret, independent of perceivers' ability to engage in counterfactual thinking. Feelings of desirability, then, may mediate the relationship between action or inaction and judgments of regret.

In many decision-making situations, a critical dimension of a decision's desirability is whether it is consistent with the decision maker's orientation (i.e., the individual's personality, knowledge structure, mood, or goals). This is the case because of individuals' inclinations toward consistency (e.g., Abelson et al., 1968; Aronson, 1969; Festinger, 1957). When decisions involve actions or inactions, a critical dimension would be whether the decision is consistent with decision makers' orientation toward action or inaction. Actions or inactions that are

consistent with decision makers' orientation should typically be more desirable and less anxiety provoking than are actions or inactions that are inconsistent with decision makers' orientation. It follows from this reasoning that both perceptions of consistency and feelings of desirability may mediate the relationship between action or inaction and judgments of regret. Consequently, an act of commission that is consistent with a decision maker's orientation is likely to generate less regret than will an act of omission that is inconsistent with the person's orientation. Conversely, an act of commission that is inconsistent with a decision maker's orientation is likely to generate more regret than will an act of omission that is consistent with the person's orientation. For example, a decision to not act is likely to be especially regretted by an active decision maker, whereas an action is likely to be especially regretted by an inactive decision maker. 1

In testing these ideas, the following studies were designed with two major goals in mind. First, we were interested in determining when an act of commission would produce a level of regret that was higher (or lower) than the level an act of omission would produce. From our perspective, this relationship depends on the orientation of the decision maker. Actions or inactions that are consistent with decision makers' orientation are desirable and will produce relatively low levels of regret, whereas inconsistent actions or inactions are undesirable and will produce relatively high levels of regret. The second major goal of this research was to determine whether mutability or the desirability and consistency of a decision mediates the relationship between action or inaction and judgments of regret.

OVERVIEW OF EXPERIMENTS 1–4

In Experiment 1, participants were told that a businessman (the target) was either a risk seeker or a risk avoider. Further, they were told that the businessman had made an error involving either an action or an inaction. For an action-oriented risk seeker, an act should be consistent and desirable, whereas a decision to not act should be relatively inconsistent and undesirable. However, relative to the inactive orientation of a risk avoider, action should be inconsistent and undesirable, whereas inaction should be relatively consistent and desirable. When a particular orientation is associated strongly with the target, perceivers can adopt the target's perspective when making judgments about the target's actions or inactions. Therefore, on the one hand, we expect perceivers to judge that inactions are especially regretted when they are performed by a risk seeker; on the other hand, we expect perceivers to judge that actions are especially regretted when they are performed by a risk avoider.

N'gbala and Branscombe (1997) have argued against norm theory's (Kahneman & Miller, 1986) mutability interpretation as it applies to regret judgments following actions or inactions. According to these authors, it is wisdom, not mutability, that causes especially high levels of regret to be associated with acts of commission. We expected the desirability and consistency of a decision to drive judgments of regret independent of wisdom. For example, on the one hand, when perceivers are judging the behavior of a risk seeker, they should associate more regret with an act of omission, even though they may believe that the target's decision was wise. On the other hand, when perceivers judge the behavior of a person who is risk averse, they should associate especially low levels of regret with an act of omission, and they may also

believe that the act of omission was especially wise. To test the wisdom prediction, we included a wisdom measure in Experiment 1.

In Experiment 2, we concentrated our attention on the vignette concerning the risk-seeking businessman to isolate the process(es) responsible for perceivers' regret judgments following decisions to act or not act. Specifically, this study was designed to determine whether counterfactual thinking or the desirability and consistency of a decision mediated the relationship between action or inaction and regret.

Experiment 3 was designed to determine if decision makers' own regret judgments were influenced by their orientation. We expected that from the perspective of an individual with an active orientation, inaction would be especially regretted, whereas from the perspective of an inactive-oriented decision maker, action would be especially regretted.

Experiment 4 also involved the judgments and actions or inactions of decision makers. This study was designed with two major goals in mind. First, we were interested in providing a conceptual replication of Experiment 3 that involved a different procedure. In Experiment 3, participants' regret judgments followed their being informed that their action or inaction was in error. It is of interest to determine whether similar results can be obtained when participants look back at past decisions, given the position advocated by Gilovich and colleagues (Gilovich & Medvec, 1994; Gilovich et al., 1995). These authors argued that regret judgments may not always be symmetrical across time. For example, Gilovich et al. (1995) have shown that although acts of commission can generate more regret at the outset, acts of omission often generate more regret in the long run, when decision makers consider decisions that they made in the past. From our perspective, the desirability and consistency of an action or inaction can be responsible for judgments of regret when these judgments are made at the outset (as in Experiment 3) or when they are made by perceivers who consider decisions made in the past (as in Experiment 4).

In Experiment 4, we used a decision problem that was likely to be encountered by our participants—one in which they decided to go out (action) or stay home (inaction) when they were in either an active or an inactive mood. If we are correct in our analysis, then, just as in Experiment 3, a decision associated with inaction should be especially regretted by an action-oriented decision maker. From the perspective of an inactive-oriented decision maker, a decision associated with action should be especially regretted. In addition, this study was designed to determine the process(es) responsible for these effects. Specifically, Experiment 4 was designed to determine whether it was counterfactual thinking or the desirability and consistency of the decision that mediated the relationship between decisions associated with action or inaction and judgments of regret.

EXPERIMENT 1

METHOD

Participants and design

Seventy-nine female participants from introductory psychology classes were assigned randomly to one of four experimental conditions. On average, 8 female participants were in each group. We used all female participants because women composed the vast majority of our population sample.

The between-subjects design consisted of two levels of two independent variables. There were two levels of the target's orientation (the target was described as being either a risk seeker or a risk avoider) and two types of actions (a decision associated with action and one associated with inaction). Judgments of regret and decision wisdom were the dependent variables.

Procedure

Participants read a description of a businessman. These descriptions contained information that was similar to that used by Kahneman and Tversky (1982). In the action vignette, participants read, “Mr. Paul owned shares in Company B. During the past year he switched to stock in Company A. He now finds that he would have been better off by $1,200 if he had kept his stock in Company B.” In the inaction vignette, they read, “Mr. Paul owned shares in Company A. During the past year he considered switching to stock in Company B, but he decided against it. He now finds that he would have been better off by $1,200 if he had switched to Company B.”

In the risk-seeker condition, participants were told that the businessman was a person who enjoyed taking risks, whereas in the risk-avoider condition, they were told that he was a person who avoided risks. In the risk-seeker condition, they read, “Mr. Paul loves to take risks. He has been known throughout his life as someone who was willing to take a chance. When he was in high school, his friends all categorized him as a risk taker. At this point in Mr. Paul's life, he still likes to take chances.” In the risk-avoider condition, they read, “Mr. Paul hates to take chances. He has been known throughout his life as someone who was not willing to take a chance. When he was in high school his friends all categorized him as risk avoidant. At this point in Mr. Paul's life, he still does not like to take chances.”

Participants were asked to indicate the level of regret they felt was associated with the decision. Specifically, they were asked, “How much regret do you think Mr. Paul has?” Participants were also asked to indicate the level of wisdom they felt was associated with the decision: “How wise do you think Mr. Paul was?” For both questions, we used an anchored 101-point scale. For the regret question, 0 represented *not at all* and 100 represented *very much.* Similarly, for the wisdom question, 0 represented *not at all* and 100 represented *very much.*

Results and Discussion

To test the assumption that decisions associated with action are associated with a risk seeker and inaction with a risk avoider, we asked a separate set of participants to indicate whether a risk avoider or a risk seeker was associated more closely with an action or with an inaction. A chi-square analysis revealed that a significant number of participants believed that action was associated with a risk taker and inaction with a risk avoider, $\chi^2(1, N = 15) = 9.01$, $p < .01$.

We performed an analysis of variance (ANOVA) on participants' regret scores. The means for each of the four experimental conditions are contained in Table 1. The analysis revealed a significant main effect for type of action, $F(1, 75) = 5.85$, $p < .05$. In addition, perceivers' orientation interacted with the type of action that they evaluated, $F(1, 75) = 15.48$, $p < .001$. To determine the nature of this interaction, we performed planned contrasts. In the risk-seeker condition, we expected more regret to be associated with inaction than with action, whereas we expected an opposite pattern in the risk-avoider condition. As may be seen from Table 1, more regret was associated with inaction in the risk-seeker condition, $F(1, 75) = 7.56$, $p < .01$, whereas more regret was associated with action in the risk-avoider condition, $F(1, 75) = 7.93$, $p < .01$. These data support our assumptions concerning the role that a target's orientation plays in social judgment. From the perspective of a risk seeker, a decision not to act was assumed to be especially inconsistent and undesirable. Therefore, an especially high level of regret was expected to be associated with a risk seeker's inaction. However, from the perspective of a person who is risk averse, a decision to act is especially inconsistent and undesirable. Consequently, we expected and found an especially high level of regret associated with a risk avoider's decision to act.

Table 1
Mean Regret Ratings as a Function of Orientation and Type of Action: Experiment 1

	Type of Action			
	Commission		Omission	
Orientation	*M*	*SD*	*M*	*SD*
Risk seeker	48.4	26.9	70.3	28.9
Risk avoider	83.8	15.4	61.8	25.9

To test the role of judgments of wisdom in determining regret, we performed an ANOVA on participants' wisdom scores. The means for each of the four experimental conditions are contained in Table 2. This analysis revealed a marginally significant type of action main effect, $F(1, 75) = 2.25$, $p < .14$. As may be seen from Table 2, participants believed the decision to be wiser in the act of omission condition than in act of commission condition. We did not obtain an Orientation × Type of Action interaction, $F(1, 75) = 0.01$, $p > .90$, as was the case for the regret measure. In fact, regret and wisdom produced opposite results in the risk-seeker condition. An

act of omission was associated with an especially high level of regret, even though this action was considered an especially wise decision. To further test this issue, we included regret and wisdom in a repeated measures ANOVA. This analysis included two levels of orientation and two levels of type of action. If perceivers' wisdom estimates are not directly responsible for their regret judgments, then the analysis should reveal an Orientation × Type of Action repeated measures (regret and wisdom) interaction. This analysis yielded a significant type of Action × Orientation interaction, $F(1, 75) = 9.71$, $p < .01$, as well as an Orientation × Type of Action × Measure interaction, $F(1, 75) = 7.75$, $p < .01$. Consequently, judgments about wisdom did not mirror judgments of regret, and wisdom judgments were not the primary cause for judgments of regret.

Table 2
Mean Wisdom Ratings as a Function of Orientation and Type of Action: Experiment 1

	Type of Action			
	Commission		Omission	
Orientation	*M*	*SD*	*M*	*SD*
Risk seeker	48.0	27.7	55.9	17.9
Risk avoider	48.1	17.1	55.0	22.0

Why the decision makers' orientation was not positively related to perceivers' judgments of wisdom is an interesting question. Our data address this question, although this was not the primary purpose of the present research. It may be that when perceivers are asked to make a wisdom judgment, they are implicitly being asked to concentrate on the merits of the decision itself, independent of the relationship between the decision and the decision makers' orientation. Therefore, because the decision makers' orientation has an important influence on judgments of regret, wisdom judgments may not always be related to regret judgments.

EXPERIMENT 2

It is clear from the results of Experiment 1 that information about a target's orientation to act or not act influenced perceivers' judgments of regret following an error of commission or omission. However, it is not clear from this experiment whether it was desirability and consistency or mutability that mediated the relationship between action or inaction and judgments of regret. To address this question, we used the risk-seeking vignette from Experiment 1 and asked participants questions about the desirability and consistency of their action or inaction. In addition, we asked them to list their counterfactual thoughts.

METHOD

Participants and design

Thirty-four female and 4 male participants from an introductory psychology class were assigned randomly to one of two experimental conditions. The between-subjects design included two types of decisions (involving action and inaction) made by a risk-seeking businessman. Participants were asked four different questions: a consistency measure, a desirability measure, a counterfactual measure, and a regret judgment measure.

Procedure

Participants read a description that was used in Experiment 1 concerning the risk-seeking businessman. However, the way the information was given to participants differed from the way it was introduced in Experiment 1. In this study, participants were given information about Mr. Paul's risk-seeking personality and his decision to switch or not switch his stock holdings. However, they were not given information about the consequence of his decision until after they completed a consistency question and a desirability question. Participants were asked how consistent the decision (not switching stocks in the inaction condition or switching stocks in the action condition) was with the type of action or inaction that Mr. Paul typically desired. We used an anchored 101-point scale where 0 represented very inconsistent and 100 represented very consistent. Participants were then asked how sad or happy they believed Mr. Paul felt after making his decision. We used an anchored 101-point scale where 0 represented very sad and 100 represented very happy.

After answering these questions, participants were given information about the results of Mr. Paul's decision. The consequences of this decision were identical to those in Experiment 1. In both conditions (action and inaction), Mr. Paul would have been better off by $1,200 if he had made the opposite decision.

Participants were also asked to imagine how the outcomes might have been different for Mr. Paul and to use those thoughts to complete as many “if only” statements as they could think of. These statements referred to how things might have been different if only something had or had not occurred. The regret question followed the “if only” questions. We used a 101-point scale where 0 represented not at all and 100 represented very much for this regret question.

Results and Discussion

We performed an ANOVA on participants' judgments of regret. The analysis revealed a significant main effect for type of action, $F(1, 36) = 11.21$, $p < .01$. Judgments of regret were higher in the inaction condition ($M = 78.8$) than in the action condition ($M = 50.3$). This result was expected, because a decision associated with inaction is inconsistent with the orientation of a risk seeker. We also performed a regression analysis with action or inaction serving as the

predictor variable and judgments of regret as the dependent variable. Consistent with the ANOVA, this analysis indicated that action or inaction predicted judgments of regret, $\beta = -.487$, $p < .01$. (In this and in all of our subsequent multiple regression analyses, all predictor variables were entered simultaneously.)

To determine whether mutability mediated the relationship between action or inaction and judgments of regret, we performed a multiple regression analysis in which the number of counterfactuals and action or inaction served as predictor variables and judgments of regret as the dependent variable. Action or inaction predicted judgments of regret, $\beta = -.483$, $p < .01$, but counterfactuals did not, $\beta = -.036$, $p > .80$. Therefore, the number of counterfactuals did not mediate the relationship between action or inaction and judgments of regret.

Although the number of counterfactuals was not a predictor, it may be the case that the type of counterfactuals mediated the relationship between action or inaction and judgments of regret. Additive and subtractive counterfactuals are two types of counterfactuals that have been identified (e.g., Roese, Hur, & Pennington, 1999). Additive counterfactuals refer to the addition of an omitted act, whereas subtractive counterfactuals refer to the deletion of an action. To test whether additive or subtractive counterfactuals mediated the relationship between action or inaction and judgments of regret, we performed two separate mediational analyses: one in which action or inaction and additive counterfactuals served as predictor variables and the other in which action or inaction and subtractive counterfactuals served as predictor variables. In the first analysis, action or inaction predicted judgments of regret, $\beta = -.513$, $p < .002$, whereas additive counterfactuals did not, $\beta = -.128$, $p > .35$. In the second analysis, action or inaction predicted judgments of regret, $\beta = -.634$, $p < .001$, whereas subtractive counterfactuals did not, $\beta = .241$, $p > .15$. Therefore, neither additive nor subtractive counterfactuals mediated the relationship between action or inaction and judgments of regret.

We expected desirability and consistency to mediate the relationship between action or inaction and judgments of regret. To test whether desirability (i.e., how happy or sad the target felt about his decision) mediated this relationship, we performed a multiple regression analysis in which action or inaction and desirability served as predictor variables and judgments of regret as the dependent variable. In this analysis, action or inaction no longer predicted judgments of regret, $\beta = -.157$, $p > .25$, whereas desirability did predict judgments of regret, $\beta = -.592$, $p < .001$. As desirability increased, regret judgments decreased. Further, desirability was correlated with action or inaction, $r = -.558$, $p < .001$. Consequently, desirability mediated the relationship between action or inaction and judgments of regret.

Given the strong relationship between consistency and desirability, $r = .860$, $p < .001$, perceptions of consistency or inconsistency should also mediate this relationship. To test this position, we performed a multiple regression analysis in which action or inaction and consistency served as predictor variables and judgments of regret as the dependent variable. Action or inaction did not predict judgments of regret, $\beta = -.241$, $p > .09$, whereas consistency did predict judgments of regret, $\beta = -.549$, $p < .001$. As the degree of consistency increased, regret judgments decreased. Further, there was a significant correlation between consistency

and action or inaction, $r = -.449$, $p < .01$. Therefore, consistency mediated the relationship between action or inaction and judgments of regret.

These results provide strong support for our view that decisions that are especially undesirable and inconsistent from the perspective of decision makers generate especially high levels of regret. Desirability and consistency both mediated the relationship between action or inaction and judgments of regret, whereas mutability did not.

The results of this experiment, as well as those of Experiment 1, bear on the conclusions drawn from a recent study by Roese et al. (1999). These authors applied Higgins's promotion and prevention focus distinction to counterfactual thinking. According to Higgins (e.g., Higgins, 1996a, 1996b, 1999), two distinct self-regulatory systems exist. The promotion focus is concerned with advancement and accomplishments: It involves situations that represent the presence or absence of positive outcomes. The prevention focus is concerned with safety and nonlosses: It involves situations that represent the presence or absence of negative outcomes. Using this distinction, Roese et al. (1999) found that additive counterfactuals were associated with a promotion focus, whereas subtractive counterfactuals were associated with a prevention focus.

However, Roese et al. (1999) did not measure perceivers' judgments of regret, nor were they concerned with how the relationship between the decision and the decision maker's orientation influenced these judgments. Rather, they concentrated their attention on additive and subtractive counterfactuals. Inferences about regret judgments were based on perceivers' production of additive and subtractive counterfactuals. Consequently, they did not test whether counterfactual thinking mediated the relationship between action or inaction and regret. In the present study, we determined that neither the number nor the type of counterfactual thoughts mediated the relationship between decisions (associated with actions or inactions) and judgments of regret. Rather, it was the perceived desirability and consistency of these decisions that mediated this relationship.

The results of Experiments 1 and 2 provide support for our interpretation of judgments concerning errors of commission and omission. However, participants in all of these studies made judgments about a target's action or inaction, not about their own decisions. Experiment 3 was designed to determine if actors' orientation influences judgments about their own behavior—about their own errors of commission and omission.

EXPERIMENT 3

METHOD

Participants and design

One hundred fourteen female participants from introductory psychology classes were assigned randomly to one of four experimental conditions. Participants were tested in small groups containing, on average, 12 participants.

The between-subjects design included two levels of two independent variables. There were two orientation conditions (action or inactive) and two action types (error of commission or error of omission).

Procedure

Each participant read that the experimenter was interested in determining how students at the school performed on a decision-making task relative to other students, as well as how the student's school performed relative to other schools in the system. The student's task was to choose the company that made the most profit. They were told that the correct answer was based on archival data from actual case files. Participants read that although the profit of the company was hypothetical, it would contribute to their score. That is, the more the company they chose earned, the better their score.

The task we chose was framed in a way that would allow us to induce the vast majority of our participants to either keep stock in the company they were given (an act of omission) or switch to stock in a different company (an act of commission). We used this procedure to manipulate independently participants' decision to engage in an error of omission or commission. To accomplish this, we modified a vignette used by Tversky and Kahneman (1981).

All participants read that they could keep a stock in Company X or switch to Company Z. In the error of omission condition, they read that if they kept stock in Company X, they could earn a $2,000 profit. Their other option was to switch from this stock to stock in Company Z. If they switched to Company Z, they would have a one-third probability of having a $6,000 profit and a two-thirds probability of gaining no profit. In a study using a similar task, the vast majority of participants (over 70%) chose to keep stock in Company X (Tversky & Kahneman, 1981). After making their choice, participants choosing to keep stock in Company X were told that they would have been better off by $4,000 if they had switched to Company Z.

In the error of commission condition, participants read that if they kept stock in Company X, they would have a one-third probability of having a $6,000 profit and a two-thirds probability of gaining no profit. Their other option was to switch from this stock to stock in Company Z and earn a $2,000 profit. In a study with a similar vignette, the vast majority of participants chose to switch (Tversky & Kahneman, 1981). After making their choice, participants choosing to switch

their stock were told that they would have been better off by $4,000 if they had stayed with Company X. [2]

After being given information about their decision, participants were told that the decision-making part of the experiment was concluded. In the next task, the experimenter was interested in determining events that made people feel a particular way. In the active mood orientation condition, participants were asked to write six statements describing situations that made them feel happy and energetic, whereas in the inactive mood orientation condition, they were asked to write six statements describing situations that made them feel sad and depressed.

After this manipulation, participants were asked to indicate the amount of regret that they felt in having made their decision on the task involving stocks. Participants were asked to indicate their level of regret on a 101-point scale, where 0 represented *no regret* and 100 represented *very much regret.*

Results and Discussion

To determine whether participants adhered to our orientation manipulation, we had two raters judge the positivity of each statement. In the active mood orientation condition, 97% of the statements were considered positive by Rater 1; 100% were considered positive by Rater 2. In the inactive mood orientation condition, 98% were considered negative by Rater 1, whereas 100% of the statements were considered negative by Rater 2. The responses of Rater 1 were positively correlated with those of Rater 2, $r = .94$, $p < .001$. [3] In addition, we asked a separate group of 33 students whether a happy and energetic mood was associated with action or inaction and whether a sad and depressed mood was associated with action or inaction. Ninety-one percent of participants indicated that a happy and energetic mood was associated with action, and 91% of participants indicated that a sad and depressed mood was associated with inaction.

We performed an ANOVA on participants' regret scores. The means for each of the four experimental conditions are contained in Table 3. The analysis revealed an Orientation × Type of Action interaction, $F(1, 88) = 7.2$, $p < .01$. [4] To determine the nature of this interaction, we performed planned contrasts. In the active mood orientation condition, more regret was associated with an error of omission than with an error of commission, $F(1, 88) = 4.29$, $p < .05$. An opposite pattern emerged in the inactive mood orientation condition. In this condition, more regret was associated with an error of commission than with an error of omission, $F(1, 88) = 3.0$, $p < .09$. [5] These results provide support for our analysis of regret judgments following errors of omission and commission. Specifically, they provide support for our view that decisions that are desirable and consistent with decision makers' orientation produce especially low levels of regret; actions or inactions that are undesirable and inconsistent with orientation produce especially high levels of regret.

Table 3
Mean Regret Ratings as a Function of Orientation and Type of Action: Experiment 3

	Type of Action			
	Commission		Omission	
Orientation	*M*	*SD*	*M*	*SD*
Active mood	35.0	27.2	52.8	33.2
Inactive mood	53.4	28.8	38.6	27.1

EXPERIMENT 4

Experiment 4 was designed with several purposes in mind. First, we were interested in determining whether we could conceptually replicate the results of Experiment 3 with a different procedure. In Experiment 3, decisions and judgments of regret were made in close temporal proximity with one another. In Experiment 4, we used a different situation, one in which participants were looking back at a decision. They were asked to consider either a decision associated with an action or one associated with an inaction; the decisions produced identical losses.

The decision context used in this experiment was one that participants were very likely to have personally experienced: a decision to stay home or to go out. When making this decision, participants are often in an active or inactive mood. Therefore, we asked our participants to remember themselves in an active or inactive mood while they thought about their decision. On the one hand, a decision associated with inaction should be especially inconsistent (and undesirable) from the perspective of a decision maker in an active mood. Therefore, for a person with this orientation, inaction should produce especially high levels of regret. On the other hand, a decision associated with inaction should be especially consistent and desirable from the perspective of a person in an inactive mood. Therefore, for a person with this orientation, inaction should produce especially low levels of regret. These expected results would conceptually replicate those obtained in Experiment 3.

In Experiment 4, perceivers considered decisions that they made in the past. In prior research, when perceivers have been asked to consider decisions made in the past, decisions associated with inaction have typically produced more regret than have decisions associated with action (e.g., Gilovich & Medvec, 1994; Gilovich et al., 1995). The expected results of Experiment 4 would indicate that even when perceivers consider decisions that they made in the past, a decision to act may be especially regretted by an inactive-oriented person, but it may be the decision to not act that is especially regretted by an active-oriented person.

We were also interested in determining whether mutability or desirability and consistency mediated the relationship between action or inaction and judgments of regret. To address this

question, we asked participants questions about the desirability and consistency of their action or inaction. In addition, we asked them to list their counterfactual thoughts.

METHOD

Participants and design

Forty-seven female and 5 male participants from an introductory psychology class served as participants in exchange for partial credit toward the completion of research requirements. The between-subjects design consisted of two levels of two independent variables. [6] There were two orientation conditions (active and inactive) and two action types (decision associated with action or inaction). Participants were asked four different questions: a consistency measure, a desirability measure, a counterfactual measure, and a regret judgment measure.

Procedure

Each participant was given a sheet of typed instructions. Participants were told to read the information and to answer the questions that pertained to the information. They were asked to think about a situation in which they were at home and considered whether to stay home or go out. They either stayed home (in the decision associated with the inactive condition) or decided to go out (in the decision associated with the inactive condition). In all cases, participants were told that they found out that they would have been somewhat better off if they had made the opposite decision—to go out when they stayed home or to stay home when they went out.

In addition, participants in the inactive and active orientation conditions were told that when they made their decision, they were in an inactive or active mood. In the inactive orientation condition, participants were tired from a busy day and were interested in remaining in their present state; participants in the action orientation condition were active and were also interested in remaining in their present state.

Participants were reminded of their mood state before being asked questions concerning their decision. In the consistency question, they were asked to indicate how consistent their decision (staying home or going out) was with their mood on an anchored 101-point scale where 0 represented *very inconsistent* and 100 represented *very consistent.* Participants were then asked to indicate how happy they felt after making this decision on an anchored 101-point scale where 0 represented *very unhappy* and 100 represented *very happy.*

After answering these questions, participants were asked to imagine how the outcomes might have been different for them and to use those thoughts to complete as many “if only” statements as they could think of. These statements referred to how things might have been different if only something had or had not occurred. Finally, participants were asked to indicate how much regret they had on a 101-point scale where 0 represented *not at all* and 100 represented *very much.*

Results and Discussion

We performed an ANOVA on participants' judgments of regret. The analysis revealed a significant Orientation × Type of Action interaction, $F(1, 54) = 15.33$, $p < .05$. Table 4 contains the means of the four experimental conditions. [7] To explore this interaction, we performed two additional analyses: one on the active orientation condition and the other on the inactive orientation condition. For the active orientation condition, simple effects tests revealed a significant main effect for type of action, $F(1, 27) = 7.20$, $p < .05$. As expected, participants had especially high levels of regret when they had decided not to act. Opposite effects were expected and obtained in the inactive orientation condition. In this condition, the analysis revealed a significant main effect for action type, $F(1, 27) = 8.24$, $p < .05$. However, participants in this condition had especially high levels of regret when they decided to act. These results conceptually replicate those obtained in Experiments 1–3.

Table 4
Mean Regret Ratings as a Function of Orientation and Type of Action: Experiment 4

	Type of Action			
	Commission		Omission	
Orientation	*M*	*SD*	*M*	*SD*
Active	43.2	26.6	67.7	22.3
Inactive	66.9	18.6	43.2	25.5

Within the active orientation condition, we also performed a regression analysis with decisions to act or not act serving as the predictor variable and judgments of regret as the dependent variable. Consistent with the ANOVA, this analysis indicated that the decision to act or not act predicted judgments of regret, $\beta = -.459$, $p < .05$. Especially high levels of regret were associated with decisions not to act. An identical analysis was performed within the inactive orientation condition. This analysis was also consistent with the ANOVA. The decision to act or not act predicted judgments of regret, $\beta = .483$, $p < .05$. Especially high levels of regret were associated with decisions to act.

To determine whether mutability mediated the relationship between the decision to act or not act and judgments of regret within the active orientation condition, we performed a multiple regression analysis in which the number of counterfactuals and decisions to act or not act served as predictor variables and judgments of regret as the dependent variable. We performed the identical analysis within the inactive orientation condition. Decisions to act or not to act predicted judgments of regret in both the active and the inactive orientation conditions, $\beta = -.44$, $p < .05$, and $\beta = .525$, $p < .05$, respectively, but counterfactuals did not, $\beta = .077$, $p > .60$, and $\beta = .233$, $p > .15$, respectively. Therefore, the number of counterfactuals did not mediate the relationship between decisions to act or not act and judgments of regret.

Although the number of counterfactuals was not a mediator, it may be the case that the type of counterfactual (additive or subtractive) mediated the relationship between decisions to act or not act and judgments of regret. First, we tested whether additive counterfactuals mediated the relationship between decisions to act or not act and judgments of regret within the active orientation condition. We performed a multiple regression analysis in which additive counterfactuals and decision to act or not act served as predictor variables and judgments of regret as the dependent variable. We performed the identical analysis within the inactive orientation condition. Decisions to act or not act predicted judgments of regret in both the active and the inactive orientation conditions, $\beta = -.438$, $p < .05$, and $\beta = .547$, $p < .05$, respectively. Additive counterfactuals, however, did not predict judgments of regret in either the active or the inactive orientation condition, $\beta = .212$, $p > .20$, and $\beta = .24$, $p > .15$, respectively. Consequently, addictive counterfactuals did not mediate the relationship between decisions to act or not act and judgments of regret.

Identical analyses were performed on subtractive counterfactuals. Within both the active and the inactive orientation conditions, we performed a multiple regression analysis in which subtractive counterfactuals and decisions to act or not act served as predictor variables and judgments of regret as the dependent variable. Decisions to act or not act predicted judgments of regret in both the active and the inactive orientation conditions, $\beta = -.489$, $p < .01$, and $\beta = .487$, $p < .01$, respectively. However, subtractive counterfactuals did not predict judgments of regret in either the active or the inactive orientation condition, $\beta = -.131$, $p > .40$, and $\beta = .12$, $p > .40$, respectively. Therefore, subtractive counterfactuals did not mediate the relationship between action or inaction and judgments of regret.

To test whether desirability (i.e., how unhappy or happy the participant felt about this decision) mediated this relationship within the active orientation condition, we performed a multiple regression analysis in which decisions to act or not act and desirability served as predictor variables and judgments of regret as the dependent variable. We performed the identical analysis within the inactive orientation condition. Decisions to act or not act no longer predicted judgments of regret in either the active or the inactive orientation condition, $\beta = -.116$, $p > .50$, and $\beta = -.019$, $p > .50$, respectively, but desirability continued to predict judgments of regret. Desirability was a significant predictor in the active orientation condition, $\beta = -.561$, $p < .01$, and in the inactive orientation condition, $\beta = -.752$, $p < .01$. In both conditions, as desirability increased, feelings of regret decreased. Furthermore, desirability was correlated with decisions to act or not act in both the active and the inactive orientation conditions, $r = -.611$, $p < .01$, and $r = .688$, $p < .01$, respectively. Consequently, desirability mediated the relationship between decisions to act or not act and judgments of regret.

Desirability was also highly related to consistency, $r = .864$, $p < .01$. Therefore, like desirability, consistency also mediated the relationship between action or inaction and judgments of regret, as shown by regression analyses in which action or inaction and consistency served as predictor variables and judgments of regret as the dependent variable. In both the active and the inactive orientation conditions, action or inaction no longer predicted judgments of regret, $\beta = -.195$, $p < .30$, and $\beta = .148$, $p < .50$, respectively, but consistency did. It predicted regret judgments in the active orientation condition, $\beta = -.431$, $p < .05$, and in the inactive orientation

condition, β = −.429, $p < .05$. In both conditions, as the degree of consistency increased, judgments of regret decreased.

These results then converge with the results of Experiments 1–3 in providing support for our view that decisions that are especially inconsistent with decision makers' orientation will generate especially high levels of regret. In addition, they converge with the results of Experiment 2 in providing support for the view that desirability and consistency can mediate the relationship between decisions and judgments of regret.

GENERAL DISCUSSION

It is typically assumed that counterfactual thinking mediates the relationship between action or inaction and judgments of regret (see N'gbala & Branscombe, 1997). In contrast to this widely held assumption, the present research suggests that the desirability and consistency of the decision play the mediational role. One determinant of a decision's desirability is whether it is consistent with the goals, personality, or general tendencies of the decision maker. When the desirability of decisions emanates from consistency relationships, both consistency and desirability should be functional in determining levels of regret. In the present research, we supported this reasoning and found that both consistency and desirability mediated the relationship between decisions to act or not act and judgments of regret. Therefore, the relationship between action or inaction and judgments of regret depends on whether it is the action or inaction that is most consistent with the decision maker's orientation. From the perspective of an action-oriented decision maker, inaction is inconsistent and undesirable, and consequently inaction is especially regretted. From the perspective of an inactive-oriented decision maker, action is inconsistent and undesirable, and consequently action is especially regretted. The results of Experiments 1–4 supported this analysis.

From our view, events, actions, or decisions that are associated with negative consequences may generate especially high levels of regret simply because they are inconsistent with perceivers' orientation. This perspective is in contrast to more widely held assumptions, derived from norm theory, that judgments of normality involve the generation of counterfactuals (e.g., Kahneman & Miller, 1986). Judgments of an event's normality or of a decision's consistency can be relatively automatic and may involve relatively molar comparisons of present circumstances to the perceiver's orientation (e.g., expectations, mood, or goals). For example, to determine a behavior's normality, perceivers may compare present behavior with past behavior; to determine the consistency of a decision, perceivers may compare a decision with their present mood state or goal. Thus, judgments of normality may involve less effortful processing than that involved in the generation of counterfactuals. Under such circumstances, counterfactuals would not be expected to mediate judgments of normality or feelings of regret.

However, counterfactuals may mediate judgments of regret under other circumstances. For example, counterfactuals may be generated when perceivers' reactions to events are very intense or abnormal. In this situation, affective intensity or abnormality may be initially generated from relatively automatic comparisons of present circumstances with general orientations or with

decision makers' knowledge structure, but this initial reaction may be followed by more effortful search processing involving attempts to understand, predict, or control the situation. Counterfactuals may be generated in this search. Thus, the event's mutability may be increased, which in turn may augment feelings of regret. If so, counterfactuals would be expected to play a mediational or moderating role in feelings of regret. Therefore, for counterfactual thinking to be influential, it may be necessary for perceivers to be motivated to engage in a search process and have sufficient cognitive capacity to access or construct alternative worlds. Of course, it may also be the case that when the event is only moderately inconsistent the search is likely to involve reasons that justify the event, in much the same way and for the same reasons that a perceiver justifies when confronted with dissonant information (e.g., Festinger, 1957). Perceivers may reduce the unpleasant consequences of inconsistency directly by altering their thoughts concerning the event or indirectly by affirming their self-worth on an unrelated dimension (e.g., Steele & Liu, 1983).

In essence, we are suggesting a two-process model in which an initial stage involves relatively automatic comparisons that can produce affective reactions and judgments of abnormality. For example, judgments of abnormality and feelings of regret may follow directly from automatic comparisons of events with a perceiver's orientation. In this stage, counterfactuals would not be expected to mediate judgments of abnormality or feelings of regret. In a second, more effortful process, counterfactuals would be expected to play a role in these judgments. In this stage, search processes involving the generation of counterfactuals may be initiated by rather intense affective reactions. These generated counterfactuals may alter judgments of abnormality and feelings of regret. Of course, future research is necessary to test the viability of this dual-process model. However, the results of the present research suggest that this direction may be fruitful.

Although our studies were designed to directly test the general question concerning how differences in consistency and desirability influenced judgments of regret, the natures of our manipulations (risk seeker vs. risk avoider; action vs. inaction) are consistent with the activities of either a promotion- or a prevention-focused individual. Studies that have manipulated self-regulatory focus by altering momentary contextual factors, such as feedback, have shown that participants with a promotion focus behave quite differently from those with a prevention focus. For example, while working on a signal detection task, individuals with a promotion focus demonstrated a risky response bias, whereas those with a prevention focus demonstrated a conservative response bias (Crowe & Higgins, 1997). The risky response bias was derived from participants' state of eagerness: their desire to advance and to avoid errors of omission.

However, the conservative response bias was derived from prevention-focused participants' state of vigilance: their desire to guard against losses and to ensure against errors of commission. A promotion focus, then, is associated with a state of risk, eagerness, or action, just as in our risk-seeker and active orientation manipulations. A prevention focus is associated with a state of safety or inactivity, just as in our risk avoider and inactive orientation manipulations. Consequently, just as an action is typically consistent with the orientation of risk seekers and active individuals, it can also be associated with the orientation of a promotion-focused individual. Conversely, just as an inaction is typically consistent with the orientation of

risk avoiders and inactive individuals, it can also be associated with the orientation of a prevention-focused individual. Therefore, in addition to providing information about action- or inaction-oriented persons, the results of our studies provide information about how promotion- and prevention-focused individuals respond to errors that follow from action versus inaction.

Our analysis speaks to situations in which decisions and judgments are in close temporal proximity to one another, as shown by the results of Experiments 1–3. It is also applicable to situations in which perceivers consider a decision from the past, as shown by the results of Experiment 4. In this study, a decision to act was especially regretted by an inaction-oriented perceiver, but it was the decision to not act that was especially regretted by an action-oriented perceiver. These results suggest that when decisions are made in the past, actions are not always more regretted than are inactions, as has been assumed by authors of prior work (e.g., Gilovich & Medvec, 1994; Gilovich et al., 1995).

Our approach may also contribute to an understanding of how temporal relationships influence feelings of regret. It may be the case that an orientation toward action is typical when persons engage in retrospective thinking. In this situation, perceivers often think about how things could have been better. In essence, they are thinking about the presence or absence of positive outcomes. This type of thinking is associated with a promotion focus (e.g., Higgins, 1999), which often entails action and risk seeking (e.g., Crowe & Higgins, 1997). This orientation, then, may cause errors of omission (from inaction) to be associated with an especially high level of regret. When individuals judge ongoing actions or inactions, they may be concerned about losses. This is likely to occur when immediate consequences of winning and losing are associated with their decision. In this case, the consequence of a loss is often more intense than is the consequence of a win (e.g., Tversky & Kahneman, 1981). As a result, because these persons are concerned mostly about a loss, they may have a prevention focus, which is associated with inaction and risk aversion (e.g., Crowe & Higgins, 1997). This orientation may cause decision makers to associate an especially high level of regret with an act of commission.

We have shown that both consistency and desirability can mediate the relationship between action or inaction and judgments of regret. However, this may not always be the case. Desirability may be influenced by other factors as well as by consistency. Further, consistency may not always be related to desirability. For example, in situations in which the two decisions (action vs. inaction) are not differentially related to the decision maker's orientation, decisions to act or not act may not be influenced by the consistency of the decision. However, if there are differences in the desirability of the two decisions, desirability may still mediate the relationship between decisions to act or not act and judgments of regret.

In Experiments 1–4, we used situations in which decisions to act or not act were either consistent or inconsistent with decision makers' orientation. Furthermore, decision makers in our studies were not implicitly or explicitly motivated to change their orientation. However, in some contexts, decision makers may have a goal to alter their present orientation. For example, a risk-averse person may have the goal of becoming a risk seeker. This situation can present a conflict between tendencies associated with the individual's present orientation and the individual's possible self (Markus & Nurius, 1986)—the individual's future plans and goals. A

decision to not act may be most desirable from the individual's present risk-avoiding orientation, whereas a decision to act may be most desirable from the perspective of the individual's possible self—the individual's goal of becoming a risk seeker. In such a situation, the decision maker may oscillate between orientations. When the risk-avoiding orientation is especially salient and memorable, a decision to act would be especially regretted; when the goal of becoming a risk seeker is especially salient and memorable, a decision to not act would be especially regretted. Therefore, by altering the relative influence of an individual's present orientation and the individual's possible self, perceivers may also change the regret level associated with a decision. This analysis, then, may provide a useful way of reducing regret levels associated with decisions by altering individuals' orientation.

There may be qualitative differences in the type of regret that a decision maker experiences. For example, errors associated with decisions involving persons' ideal self-views may produce a different type of regret than will those involving ought self-views. Higgins (e.g., 1996b, 1999) has provided a theoretical account of how ideal and ought self-guides can produce different emotions. According to Higgins, people experience dejection-type emotions when they fail to live up to their ideal self-guides (e.g., ideal goals), whereas they experience agitation-type emotions when they fail to live up to their ought self-guides (e.g., obligations). Therefore, the type of emotion associated with regret may depend on whether an error is related to a person's ideal or to a person's ought self-guide.

In a decision context, a person's ideal or ought self-guide can be the orientation that is related to the person's decision. The ideal self-guide can serve as the relevant orientation when the decision involves ideal goals or other issues related to this orientation, whereas the ought self-guide can serve as the relevant orientation when the decision involves obligations or other aspects of the ought self. Therefore, although decisions that are inconsistent with a person's ideal self-guide and decisions that are inconsistent with a person's ought self-guide are both undesirable, these decisions can be associated with different types of undesirable feelings. Decisions that are associated with a person's ideal self-guide can generate dejection-type emotions, whereas decisions associated with the person's ought self-guide can generate agitation-type emotions. Therefore, although people experience regret after committing errors of commission or omission, in one case, regret may be laced with dejection, whereas in another case, it may be laced with agitation.

We proposed that decisions to act or not act that are consistent with decision makers' orientation are desirable and will produce especially low levels of regret; decisions to act or not act that are inconsistent with decision makers' orientation are undesirable and will produce especially high levels of regret. We also proposed that desirability and consistency would mediate the relationship between decisions to act or not act and judgments of regret. The results of all four experiments supported our view. In addition, they showed that the relationship between action or inaction and judgments of regret was not mediated by mutability, as is often assumed. Rather, desirability and consistency mediated this relationship, independent of mutability.

FOOTNOTES

1. Consistency and desirability are often related when considering decisions to act or not act. However, consistency is not the only factor that is related to desirability. For example, an action may be desirable or undesirable because of its association with specific consequences. In this article, we concentrate on those situations in which the desirability of decisions emanates from the relationship of the decision to the decision maker's orientation. We discuss this issue further in the General Discussion section.
2. Participants who did not keep their stock in the error of omission condition and participants who did not switch stocks in the error of commission condition were also told that they would have been better off if they had made the opposite decision. However, according to our decision task, these participants would have been better off by $2,000, not $4,000, as was the case for participants who kept their stock in the error of omission condition or switched their stock in the error of commission condition.
3. Both raters independently reached the conclusion that one participant did not follow instructions. Therefore, this participant was excluded from further analysis.
4. Ninety-two of our 114 participants were included in the above analysis. This analysis only included participants who were induced to either keep stock in the company or switch to stock in a different company.
5. We also performed an analysis in which we included participants who did not keep their stock in the error of omission condition and those who did not switch their stock in the error of commission condition. The scores of participants who did not keep their stock were included with those of error of commission participants, whereas the scores of participants who did not switch were included with those of error of omission participants. This analysis included 113 of our 114 participants. It did not include the 1 participant who did not follow instructions. The results of this ANOVA (just as those of the ANOVA discussed in this *Results and Discussion* section) revealed a significant Orientation × Type of Action interaction, $F(1, 109) = 8.81$, $p < .01$. The pattern of this interaction was such that for active-oriented participants, more regret was associated with an error of omission; for inactive-oriented participants, more regret was associated with an error of commission.
6. Participants were assigned randomly within the inactive-orientation condition and within the active-orientation condition. The inactive- and active-orientation conditions were run (in the same lab and by the same experimenter) on separate days. One day separated the running of these conditions. However, because we expected these two conditions to produce opposite effects and because we also analyzed each condition separately, we have combined the two conditions for ease of presentation.
7. After the experiment, participants were asked if they had experienced a situation similar to the one they had just thought about. The vast majority (47 of 52 participants) indicated that they had experienced a similar situation.

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